BELKIN, Ya.G.

LABUTIN, A.V.; BELKIN, Ya.G.

"Theory of relay-contact systems" by M.A.Gavrilov, Reviewed by A.V.Labutin. Avtom. i telem. 14 no.1:118-119 Ja-F '53. (MLRA 10:3)

(Electric relays) (Automatic control)

BELKIN, Ya. G (Engr)

Dissertation: "An Investigation of the Frequency System of Telemetering Water Consumption for Municipal Water Supply Lines." Cand Tech Sci, Academy of Communal Economy imeni K. D. Pamfilov, 29 Jun 54. (Vechernyaya Moskva, Moscow, 21 Jun 54)

SO: SUM 318, 23 Dec 1954

BELKIN, Ya.G.

BELKIN, Y a.G., kandidat tekhnicheskikh nauk; KAHLINSKAYA, M.I.; MOROZ, V.A.; KAPLANSKIY, S.A., inzhener; MAGNICHKINA, V.P., inzhener; SIMYAGINA, M.N., inzhener; SOKOL'SKIY, I.F., redaktor; KONYASHINA, A., tekhnicheskiy redaktor.

[Principal factors in dispatching and automation of city water supply systems] Osnovnye polozheniia po dispetcherizatsii i avtomatizatsii sistem gorodskogo vodosnabzheniia. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1955. 38 p. (MLRA 9:1)

1. Akademiya kommunal'nogo khozyaistva.
(Water supply engineering)

BELKIN, Ya.

KORENEVKIN, D.; BELKIN, Ya.

Municipal and public service enterprises in cities of Czechoslovakia. Zhil.-kom. khoz. 7 no.3:14-17 '57.

(MLRA 10:4)

(Czechoslovakia--Municipal services)

BELKIN, Ya. G.

28(1) PHASE I BOOK EXPLOITATION SOV/2331

Karlinskaya, Marianna Il'inichna, Candidate of Technical Sciences, and Yakov Grigor'yevich Belkin, Candidate of Technical Sciences

Telemekhanizatsiya gorodskikh gazovykh khozyaystv (Telemechanization of City Gas Systems) Moscow, Izd-vo M-va kommun. khoz. RSFSR, 1958. 190 p. Errata slip inserted. 4,000 copies printed.

Ed.: N.I. Ryabtsev; Ed. of Publishing House: R.A. Avrushchenko; Tech. Ed.: A.A. Shlikht.

PURPOSE: This book was approved by the Ministry of Higher Education as a textbook for students of construction vuzes specializing in "Heat and Gas Supply and Ventilation." It is also intended for engineers and technicians engaged in the design and operation of gas supply systems.

COVERAGE: Elements of automatic and remote control systems are presented in detail and a popular exposition of the basic principles of remote control and telemetering is given. Experience acquired in the telemechanization of municipal gas supply systems is generalized and examples of remote control and telemetering devices operating in gas supply systems of Soviet and non-Soviet countries are presented. The authors discuss recent developments in gas-pipeline construction

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in the Soviet Union. They also discuss plans for the seven-year period ending in 1965 when ten new gas pipelines, with a total length of 26,000 km and originating in the North Caucasian and other gas deposits, are to be completed. The fifteen-year goal is to attain a gas production of 270 to 320 billion cu m, or 13 to 15 times more than the 1957 output. The level of production for 1956 is set at 150 billion cu m. The authors present a brief historical review of developments in telemechanics in Russia from 1832 to the present period. The following Soviet plants produce remote control and telemetering equipment: "Elektropul't" and "Energodetal'." The "Manometer" and "Tizpribor" plants produce telemetering equipment. The following institutes are engaged in developing specialized remote control equipment: Institute of Automatic Control and Telemechanics (IAT), Academy of Sciences, USSR; Central Scientific Research Electrical-Engineering Laboratory of the Ministry of Electric Power Stations (TsNIEL MES); Academy of Municipal Services; Central Laboratory of Automation (TsLA) for Ferrous Metallurgy; Scientific Research Institute of Railroad Transport; Moscow Power Institute, and the Kiyev Polytechnic Institute. Sections II and IV were written by M.I. Karlinskaya, Section III by Ya.C. Belkin, and Section I was written jointly by both authors. There are 29 references: 20 Soviet and 9 English. In addition, there is a list of 7 Soviet monographs and articles recommended for a closer study of the problems treated in the book.

TABLE OF CONTENTS:

SECTION IV. POWER SUPPLY OF REMOTE CONTROL AND AUXILIARY SYSTEMS

SECTION V. REMOTE CONTROL AND TELEMETERING SYSTEMS DEVELOPED FOR OR USED IN GAS SUPPLY SYSTEMS

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AVAILABLE: Library of Congress (TP757.K23)

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Card 7/7

BELKIN, Yakov Moiseyevich; kandidat tekhnicheskikh nauk; NEPOMNYASHCHAYA, T.F., redaktor; MEDVEDEV, L.Ya., tekhnicheskiy redaktor

[Concrete and reinforced concrete work under winter conditions] Betonnye i zhelezobetonnye raboty v zimnikh usloviiakh. Moskva, Gos. izd-vo lit-ry po stroitel'stvu i arkhitekture, 1955. 71 p. (Concrete construction--Cold weather conditions) (MLRA 8:7)

BELKIN, Ya.M., kandidat tekhnicheskikh nauk.

Calculating the temperature of concrete placed in massive structures built on frozen soil and on concrete foundations. Bet. i zhel.-bet. no.2:51-53 F '56. (MLRA 9:6)
(Concrete)

BELKIN, Ya.M., kand.tekhn.nauk

Autoclaving systems for large silicate articles made of dense and cellular mixes. Sbor. trud. ROSNIIMS no.17:13-24 '60.
(MIRA 14:12)

(Sand-lime products)
(Autoclaves)

BELKIN, Ya.M., kand.tekhn.nauk

Effect of the dynamic parameters of vibration on the moldability (placeability) of lime-sand mixes. Sbor. trud. ROSNIIMS no.17: 77-92 '60. (MIRA 14:12)

(Sand-lime products)
(Vibrators)

BELKIN, Ye., tekhnolog (g. Minsk).

What our experience teaches. Prom.koop. no.6:17 Je '57.
(MLRA 10:7)

1. Artel' "Belorus'."
(Minsk--Cleaning and dyeing industry)

BELKIN, Ya.M., kand.tekhn.nauk; ZIL'BERFARB, P.M., inzh.

Production factors which determine the physicomechanical properties of silicate concrete. Stroi.mat. 8 no.10:22-24 O '62. (MIRA 15:11)

(Sand-lime products)

BELKIN, Ya.M., kand.tekhn.nauk; KHAIMSKIY, Z.M., inzh.

Study of thermal conditions of the hardening of silicate concrete during autoclave treatment of sand-lime products. Sbor. trud. ROSNIIMS no.20:62-69 '61. (MIRA 16:1)
(Sand-lime products)

BELKIN, Ya.M., kand.tekhn.nauk; GEKHT, S.I., inzh.; KHAIMSKIY, A.M., inzh.

Determining the actual moisture of a lime-sand mixture made with ground unslaked lime. Sbor.trud.ROSNIIMS no.19:3-5 '61. (MIRA 16:1)

(Sand-lime products)

BELKIN, YE. S.

PA 193T68

USSR/Medicine - Industrial Hygiene Aug 51

"Portable Silt Ultramicroscope For Determining the Concentration of Submicroscopic Particles in the Air of Industrial Establishments," Ye. S. Belkin, A. I. Kosenko, Ukrainian Cen Sci Res Inst of Labor Hygiene and Occupational Diseases, Khar'kov

"Gig i San" No 8, pp 50, 51

Describes design of a portable ultramicroscope developed by authors through which the aerosol to be investigated is aspirated by means of any available suction device. Ultramicroscope in

193T68

USSR/Medicine - Industrial Hygiene (Contd) Aug 51

question was used successfully in mines of the Krivoy Rog Basin and at some machine building plants for detg the concn of highly dispersed aerosols.

193T68

BELKIN, Ya.S., dotsent.

Ultramicroscope for the determination of concentrations of submicroscopic dust particles. Bor'ba s sil. 1:176-179 '53. (MLRA 7:10)

1. Ukrainskiy institut gigiyeny truda i profzabolevaniy.
(DUST) (MICROSCOPE AND MICROSCOPY)

BELKIN, YE. S.

KOSENKO, A.I.; BELKIN, Ye.S., dotsent.

Ultramicroscopic determination of the electric charge and concentration of microscopic particles of mine dust. Bor'ba s sil. 1: 180-185 '53. (MLRA 7:10)

1. Ukrainskiy institut gigiyeny truda i profzabolevaniy.
(MINE DUSTS) (MICROSCOPE AND MICROSCOPY)

18(5) SOV/125-59-9-5/16

AUTHOR: Medovar, B.I., Candidate of Technical Sciences, Safonnikov, A.N., Belkin, Ye.Ya., and Sharov, O.A., Engineers

TITLE: Electric Welding under Slag of Agening Chrome-Nickel-Aluminum Stainless Steel

PERIODICAL: Avtomaticheskaya svarka, 1959, Nr 9, pp 33-44 (USSR)

ABSTRACT: Precipitation-hardening stainless steels, such as chrome-nickel austenitic steels possessing high plastic qualities, have a comparatively low strength limit; the latter property hampers their use, in cases where constructions must have a minimum weight at the maximum strength. Research has disclosed that the most efficient method to augment their strength is the creation of martensite in their structure. In the Soviet Union, the chrome-nickel-aluminum stainless steel, Type Kh 15N9Yu make SN-2 or EI904, is widely used. The transformation of austenite to martensite in steel SN-2 is realized by cold-treatment (4 hours at -50°C or 2 hours at -79°C). This process leads to a considerable

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Electric Welding under Slag of Agening Chrome-Nickel-Aluminum Stainless Steel

increase in strength, but does not change the steel fluidity limit. The works of A.P. Gulyayev, S.V. Lepnev and Ya.M.Potak maintain that the above properties are specific for transitional stages, that is, in this case for austenitic-martensitic steels. Their fluidity limit is about 40 kg/mm^2, while their strength is 100-200 kg/mm^2. The SN-2 steel is not only austenitic-martensitic; it is, at the same time, a precipitation-hardening steel. On the basis of numerous experiments, two methods for electric welding of SN-2 steel were accepted for general use: 1) Welding by means of electrode made of SN-2 steel (same as the base material) under application of flux ANF-7 (CaF_2 - CaO) and using obligatory pre-heating, and 2) welding without pre-heating, applying a new fluoride flux ANF-14 (65% CaF_2, 16% SiO_2, 3% CaO, 6% MgO, and 10% Al_2O_3). Research has disclosed that electric welding of stainless

Electric Welding under Slag of Agening Chrome-Nickel-Aluminum Stainless Steel

chrome-nickel-aluminum steel SN-2 by means of a large section electrode made of the same steel does not eliminate the appearance of non-fused spots, if a fluoride flux with increased aluminum oxide contents is used. The negative influence of aluminum oxide can be entirely neutralized by introduction into the flux of a certain amount of silicon oxide or calcium oxide, separately or combined. There are 3 tables, 1 diagram, 6 photographs and 18 references, 9 of which are Soviet, 6 English, 1 French and 2 German.

ASSOCIATION: 1) Ordena trudovogo krasnogo znameni institut elektrosvarki imeni Ye.O.Patona AN USSR (Order of the Red Banner of Labor Institute of Electric Welding imeni Ye.O. Paton,AS Ukr SSR)(Medovar; Safonnikov);2) Moskovskiy sovnarkhoz (Moscow Sovnarkhoz) (Belkin; Sharov).

SUBMITTED: May 26, 1959

BELKIN, Yu.

Conference on testing equipment. Trakt. i sel'khozmash. 33 no.4:48 Ap '63. (MIRA 16:10)

1. Direktor TSentral'noy mashinoispytatel'noy stantsii.
(Agricultural machinery--Testing)

BELKIN, Yu.; KALINKIN, A.; KOZHATKIN, G.; LOBKO, P.; KHYUKOV, V., red.

[Device for the dynamometry of mounted machines; results of comparative tests] Pribory dlia dinamometrirovaniia navesnykh mashin; rezul'taty sravnitel'nykh ispytanii. Moskva, Biuro tekhn. informatsii i reklamy, 1964. 103 p. (MIRA 18:9)

BELKIN, Yu.L., inzh.; PAVLOVSKIY, D.Ya., inzh.; SOROKIN, Ye.M., inzh.; KARAKOVA, N.I., inzh.; SOLDATENKOV, S.I., inzh.; BARSUKOV, A.F., red.; PECHENKIN, I.V., tekhn.red.

[New tractors and agricultural machinery; results of tests conducted in 1957] Novye traktory i sel'skokhozisistvennye mashiny; rezul'taty ispytanii 1957 goda. Moskva, M-vo sel'skogo khoz.SSSR. No.1. 1959. 277 p. (MIRA 13:9)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye mekhanizatsii i elektrifikatsii sel'skogo khozyaystva.
(Tractors) (Agricultural machinery)

R

USSR / Diseases of Farm Animals. General Problems.

Abs Jour : Ref Zhur - Biologiya, No 2, 1959, No. 7427

Author : Belkin-Tokushev, I. K.
Inst : Omsk Veterinary Institute
Title : The Study of Morphologic Changes of the Blood Composition of Healthy Animals Parenterally Injected with Ichthyol

Orig Pub : Sb. stud. nauchn. rabot. Omskiy vet. in-t, 1957, vyp 2, 20-22

Abstract : It was shown in experiments on healthy animals that ichthyol applied subcutaneously or cutaneously in 0.1 g/kg doses in rabbits, intramuscularly in 0.05 g/kg doses and cutaneously in 0.1 g/kg doses in foals appears to be non-toxic, even though it produces a general influence upon the organism which is expressed by higher pulse and respiration rates, leukopenia

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Abs Jour : Ref Zhur - Biologiya, No 2, 1959, No. 7427

which changes into leukocytosis, and a change of the leukocyte formula into the direction of neutrophilia or lymphocytosis. The author points out that in view of a weak bactericide effect on some anaerobes, only sterilized ichthyol solutions should be used for injections. -- L. S. Goberman

USSR/Pharmacology and Toxicology. Miscellaneous Preparations. V

Abs Jour: Ref Zhur-Biol., No 19, 1958, 89968.

Author : Belkin-Tokushev, I.K.
Inst : Omsk Veterinary Institute.
Title : On the Bactericidal Effect of Ichthyol in Relation to Some Anaerobic Bacteria.

Orig Pub: Sb. stud. nauchn. rabot. Omskiy vet. in-t, 1957, 2, 25-27.

Abstract: Subcutaneous injection of 62 ml of a 20% unsterilized solution of Ichthyol (I) in a colt led to the formation of edema in the area of the injection and to T° elevation up to 40°C. Within 24 hours the edema extended, pain and crepitation appeared, and within 3 days the colt died. A smear of the edema fluid showed cocci, diplococci and B. perfringens.

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V-38

USSR/Pharmacology and Toxicology. Miscellaneous Preparations. V

Abs Jour: Ref Zhur-Biol., No 19, 1958, 89968.

Following the inoculation of cultures derived from I into mice and rabbits, all the animals perished. In experiments with the museum type, the addition of a twice-sterilized solution of I in a concentration of 1-10 did not arrest the growth of B. perfringens, but caused the formation of involutional forms. B perfringens in a protein medium is more resistant to I than in emulsions and in physiological solution.

Card : 2/2

BELKIN-TOKUSHEV, I. K.: Master Vet Sci (diss) -- "Pathomorphological changes in the central nervous system in bacillar swine erysipelas". Omsk, 1958. 14 pp (Omsk State Vet Inst Min Agric USSR), 150 copies (KL, No 5, 1959, 154)

ACC NR: AT6017619 (N) SOURCE CODE: UR/0000/65/000/000/0296/0308

AUTHOR: Belkin, Yu. S.; Bodner, V. A.; Getsov, L. N.; Mart'yanova, T. S.; Ryazanov, Yu. A.

73

ORG: none

B+1

TITLE: Adaptive systems for the optimization work regimes and transient processes in a turbojet engine

SOURCE: Vsesoyuznaya konferentsiya po teorii i praktike samonastraivayushchikhsya sistem. 1st, 1963. Samonastraivayushchiyesya sistemy (Adaptive control systems); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 296-308

TOPIC TAGS: optimal automatic control, turbojet engine, thrust optimization, SELF ADAPTIVE CONTROL

ABSTRACT: Synthesis and analysis of an adaptive system to optimize and control various parameters of a turbojet engine is presented. The equations of the system are written out in detail and numerical data are tabulated. The analysis was performed using analog simulation and the graphical results are presented. The control parameters considered were the rpm of the turbo-compressor, the inlet and afterburner temperatures and the turbine pressure gradient. The control inputs considered were the main fuel consumption, the afterburner fuel consumption, and the nozzle cross section. Orig. art. has: 16 formulas, 7 figures, 1 table.

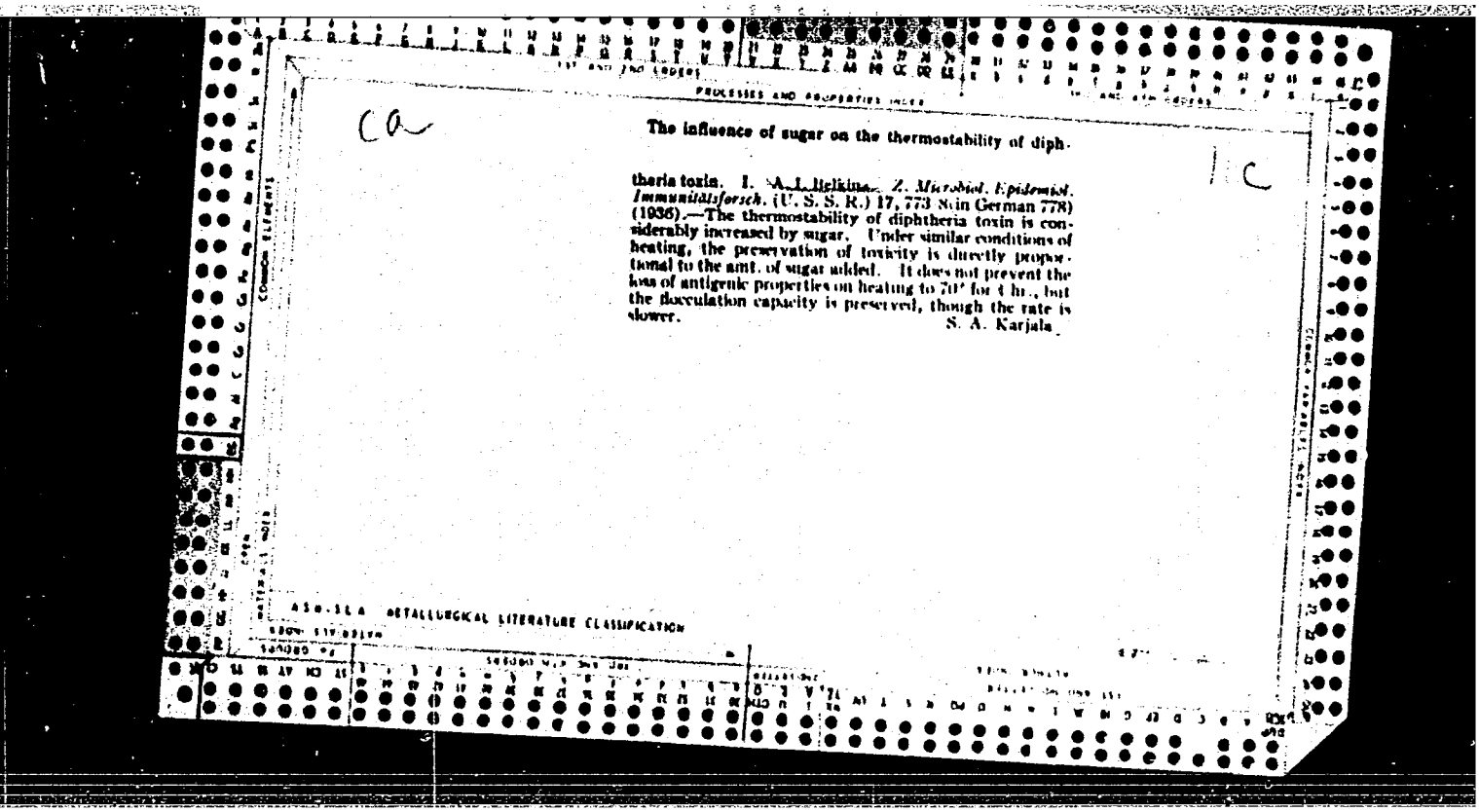
SUB CODE: 12,13,21/ SUBM DATE: 22Nov65

Card 1/1 ad

"A Contribution to the Question of the Nature of Flocculation," Zhurn. mikrobiol. i immun., XIII, 1, 99, 1934

DEMINA, A. I.

"The Adsorption of Microbes by Erythrocytes, ZhMEI, XIV, 1, 116-125, 1935



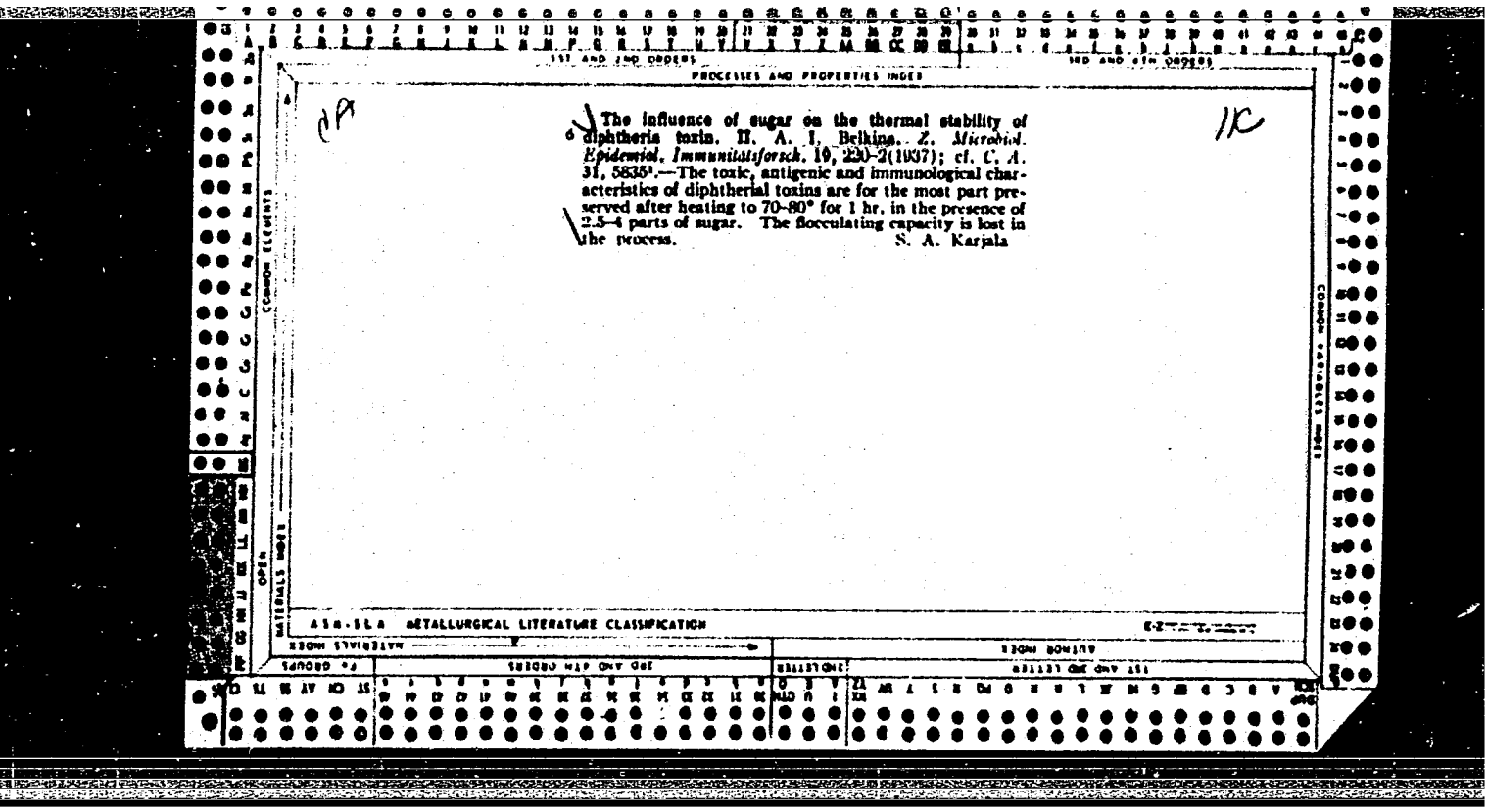
Ca

The influence of sugar on the thermostability of diphtheria toxin. I. A. I. Iglikina. *Z. Mikrobiol. Epidemiol. Immunobiologie.* (U. S. S. R.) 17, 773 (in German 778) (1936).—The thermostability of diphtheria toxin is considerably increased by sugar. Under similar conditions of heating, the preservation of toxicity is directly proportional to the amt. of sugar added. It does not prevent the loss of antigenic properties on heating to 70° for 4 hr., but the flocculation capacity is preserved, though the rate is slower.

S. A. Karjala

1 C

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

The influence of sugar on the thermal stability of diphtheria toxin. II. A. I. Belkina. *Z. Mikrobiol. Epidemiol. Immunobiologie.* 19, 230–2(1937); cf. *C. A.* 31, 5835¹.—The toxic, antigenic and immunological characteristics of diphtherial toxins are for the most part preserved after heating to 70–80° for 1 hr. in the presence of 2.5–4 parts of sugar. The flocculating capacity is lost in the process. S. A. Karjala

METALLURGICAL LITERATURE CLASSIFICATION

BELKINA, A.I.

Effect of nonspecific stimuli on immunizing effectiveness of living influenzal vaccine. Zhur.mikrobiol.epid. i immun. no.9:33-37 S '54. (MLRA 7:12)

1. Iz Moskovskogo instituta vaktsin i syvorotok imeni Mechnikova (dir. M.I.Sokolov).

(INFLUENZA, immunology,
eff. of nonspecific stimuli on animals immunized with living vaccine)
(VACCINES AND VACCINATION,
influenza, eff. of nonspecific stimuli on animals immunized with living vaccine)

BELKINA, A.I.; MOLDAVSKAYA, Ye.A.

Immunizing effectiveness of whole bacterial cells and of their complete antigens. Zhur.mikrobiol.epid.i immun. no.5:3-8 My '55. (MLRA 8:7)

1. Iz Moskovskogo instituta vaktsin i syvorotok imeni I.I.Mechnikova (dir. M.I.Sokolov).

(VACCINES AND VACCINATION,
immun. properties of whole bact. cells & of complete antigens)

S/081/62/000/006/045/117
B101/B110

AUTHORS: Buniyat-zade, A. A., Belkina, A. M., Bakhshi-zade, A. A., Petukhova, L. N.

TITLE: Destructive alkylation of toluene by means of pentane

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 199, abstract 6Zh114 (Uch. zap. Azerb. un-t. Ser. fiz.-matem. i khim. n., no. 1, 1960, 91 - 95)

TEXT: Destructive alkylation of toluene by means of n-pentane over a synthetic aluminosilicate catalyst was studied. The effect of temperature, pressure, and the volume rate on the reaction was investigated. The experiments were made by a method described earlier (RZhKhim, 1957, no. 13, 45505). It has been found that the main products of the reaction are aromatic compounds and a fraction boiling out at 125 - 145°C, n_D^{20} 1.4970, d_4^{20} 0.8650. Raman scattering showed that this fraction consists of 27 % n-, 47 % m-, 12 % o-xylene, and 14 % ethyl benzene. Oxidation of this fraction by means of $KMnO_4$ in alkaline medium yields 87.7 %

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Destructive alkylation of ...

S/081/62/000/006/045/117
B101/B110

phthalic acids. The fractions with b. 145 - 200°C, n_D^{20} 1.5010, d_4^{20} 0.8704, and with b. > 200°C, n_D^{20} 1.5390, d_4^{20} 0.899, consist of methyl ethyl-, methyl isopropyl-, methyl isobutyl benzene, and other aromatic compounds. It has been found that at 350 - 450°C the components of the reaction remain practically unchanged. At 450, 475, and 500°C, the total yield in catalyzate with b. > 125°C suddenly increases reaching 11.5, 12, and 17.4%, respectively. A temperature increase up to 520°C has no noticeable effect on the course of reaction. If the volume rate is reduced from 0.5 to 0.3 and 0.1 volumes of raw material per unit volume of the catalyst and per hour, the yield in products boiling out above 125°C increases to 21.6 and 27.6 %, respectively. If pressure is reduced from 40 to 20 atm the yield decreases by more than 2/3, and an increase in pressure up to 60 atm affects the reaction course only slightly. The gases arising in the course of the reaction consist mainly of saturated hydrocarbons and hydrogen. [Abstracter's note: Complete translation.]

Card 2/2

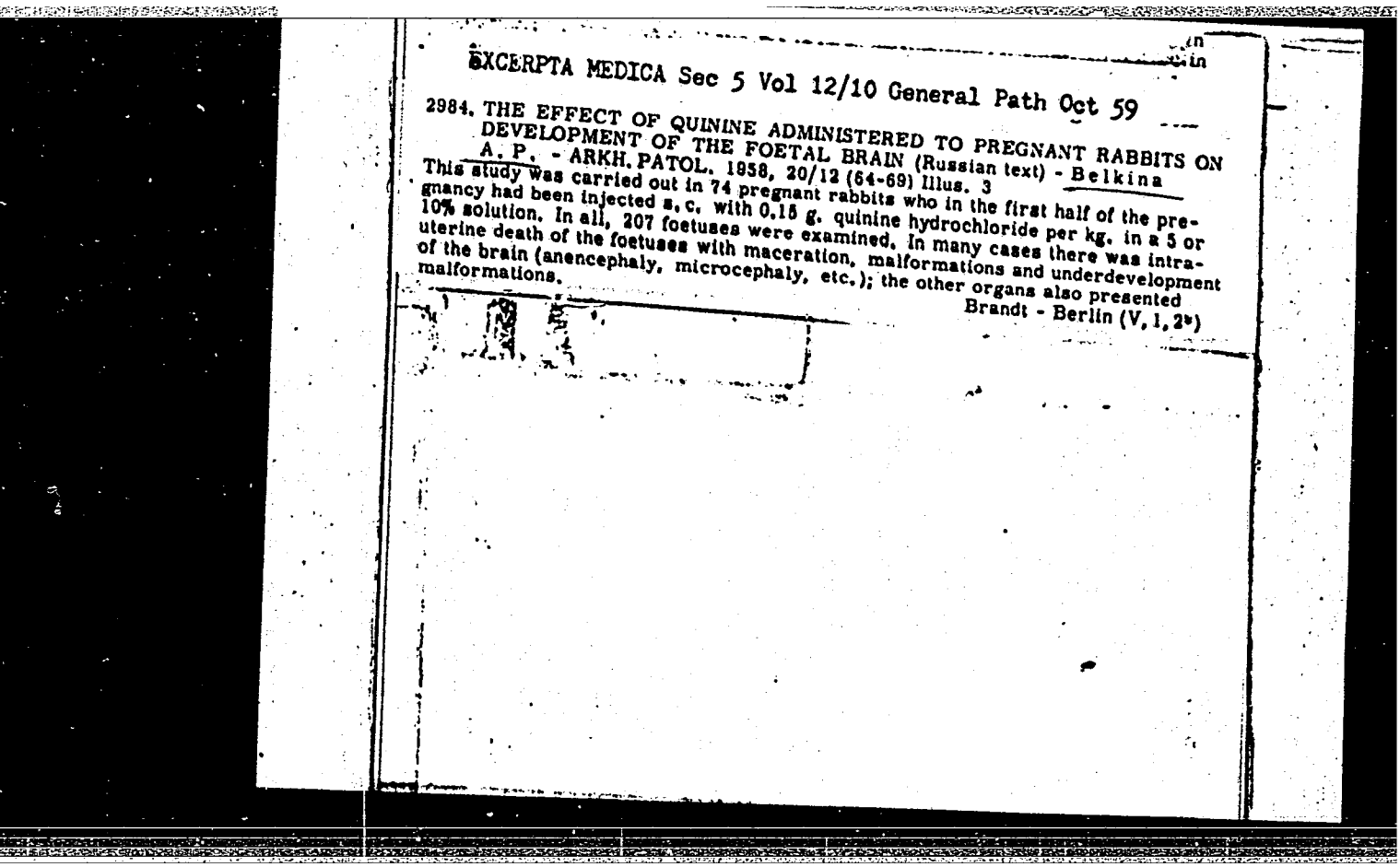
BELKINA, A.P.

Effect of harmful agents in pregnancy on the subsequent development of the child's brain. Sov.med. 21 no.11:57-65 N '57. (MIRA 11:3)

1. Iz psikhonevrologicheskoy kliniki i laboratorii po izucheniyu razvitiya mozga (zav.-chlen-korrespondent AMN SSSR prof. B.N. Klosovskiy) Instituta pediatrii (dir.-chlen-korrespondent AMN SSSR prof. O.D.Sokolova-Ponomareva) AMN SSSR.

(FETUS
eff. of dis. of mother on subsequent cerebral develop.)
(BRAIN,
develop. in child, eff. of dis. of mother during intrauterine period)
(PREGNANCY, compl.
dis., eff. on subsequent cerebral develop. of fetus)

BELKINA, A.P., Cand Med Sci--(diss) "The Effect of noxious factors acting during pregnancy, on the development of the brain of the fetus and child." Mos, 1958. 23 pp (Order of Labor Red Banner Inst of Pediatrics of the Acad Med Sci USSR), 200 copies (KL,44-58, 125)

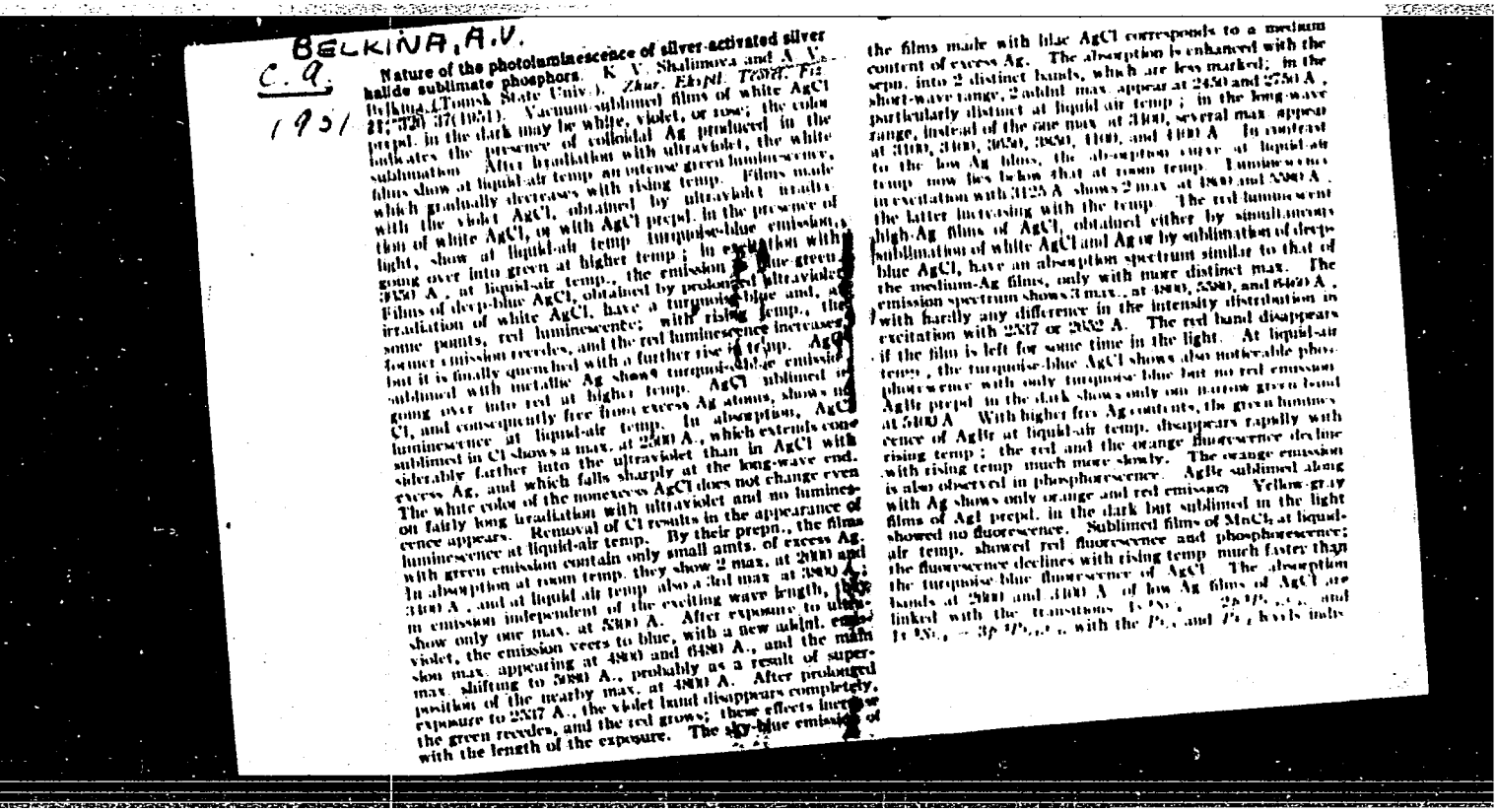


EXCERPTA MEDICA Sec 5 Vol 12/10 General Path Oct 59

2984. THE EFFECT OF QUININE ADMINISTERED TO PREGNANT RABBITS ON DEVELOPMENT OF THE FOETAL BRAIN (Russian text) - Belkina A. P. - ARKH. PATOL. 1958, 20/12 (64-69) Illus. 3

This study was carried out in 74 pregnant rabbits who in the first half of the pregnancy had been injected s.c. with 0.15 g. quinine hydrochloride per kg. in a 5 or 10% solution. In all, 207 foetuses were examined. In many cases there was intrauterine death of the foetuses with maceration, malformations and underdevelopment of the brain (anencephaly, microcephaly, etc.); the other organs also presented malformations.

Brandt - Berlin (V, 1, 2*)



BELKINA, A.V.

C.A.

1951

Nature of the photoluminescence of silver-activated silver halide sublimate phosphors. K. V. Shalimova and A. V. Belkina. (Tomsk State Univ.). *Zhur. Eksptl. Teoret. Fiz.* 21, 329-37 (1951). Vacuum-sublimed films of white AgCl prepd. in the dark may be white, violet, or rose; the color indicates the presence of colloidal Ag produced in the sublimation. After irradiation with ultraviolet, the white films show at liquid-air temp an intense green luminescence, which gradually decreases with rising temp. Films made with the violet AgCl, obtained by ultraviolet irradiation of white AgCl, or with AgCl prepd. in the presence of thin of white AgCl, or with AgCl prepd. in the presence of light, show at liquid-air temp turquoise-blue emission, going over into green at higher temp; in excitation with 3130 A., at liquid-air temp., the emission is blue-green. Films of deep-blue AgCl, obtained by prolonged ultraviolet irradiation of white AgCl, have a turquoise-blue and, at some points, red luminescence; with rising temp., the former emission recedes, and the red luminescence increases, but it is finally quenched with a further rise in temp. AgCl sublimed with metallic Ag shows turquoise-blue emission going over into red at higher temp. AgCl sublimed in Cl, and consequently free from excess Ag atoms, shows no luminescence at liquid-air temp. In absorption, AgCl sublimed in Cl shows a max. at 2500 A., which extends considerably farther into the ultraviolet than in AgCl with excess Ag, and which falls sharply at the long-wave end. The white color of the nonexcess AgCl does not change even on fairly long irradiation with ultraviolet and no luminescence appears. Removal of Cl results in the appearance of luminescence at liquid-air temp. By their prepn., the films with green emission contain only small amts. of excess Ag. In absorption at room temp. they show 2 max. at 2600 and 3400 A., and at liquid air temp also a 3rd max. at 3980 A.; in emission independent of the exciting wave length, they show only one max. at 5300 A. After exposure to ultraviolet, the emission veers to blue, with a new additional emission max. appearing at 4800 and 6480 A., and the main max. shifting to 5080 A., probably as a result of superposition of the nearby max. at 4800 A. After prolonged exposure to 2537 A., the violet band disappears completely, the green recedes, and the red grows; these effects increase with the length of the exposure. The sky-blue emission of the films made with lilac AgCl corresponds to a medium content of excess Ag. The absorption is enhanced with the sepn. into 2 distinct bands, which are less marked; in the short-wave range, 2 additional max. appear at 2450 and 2750 A., particularly distinct at liquid air temp; in the long-wave range, instead of the one max. at 3400, several max. appear at 3100, 3300, 3650, 3850, 4100, and 4400 A. In contrast to the low Ag films, the absorption curve at liquid-air temp. now lies below that at room temp. Luminescence in excitation with 3125 A. shows 2 max. at 4800 and 5500 A., the latter increasing with the temp. The red luminescent high-Ag films of AgCl, obtained either by simultaneous sublimation of white AgCl and Ag or by sublimation of deep-blue AgCl, have an absorption spectrum similar to that of the medium-Ag films, only with more distinct max. The emission spectrum shows 3 max., at 4800, 5500, and 6600 A., with hardly any difference in the intensity distribution in excitation with 2537 or 2652 A. The red band disappears if the film is left for some time in the light. At liquid-air temp., the turquoise-blue AgCl shows also noticeable photoluminescence with only turquoise-blue but no red emission. AgBr prepd. in the dark shows only an narrow green band at 5400 A. With higher Ag contents, the green luminescence of AgBr at liquid-air temp. disappears rapidly with rising temp; the red and the orange fluorescence decline with rising temp much more slowly. The orange emission is also observed in phosphorescence. AgBr sublimed along with Ag shows only orange and red emission. Yellow-gray films of AgI prepd. in the dark but sublimed in the light showed no fluorescence. Sublimed films of $SnCl_2$ at liquid-air temp. showed red fluorescence and phosphorescence; the fluorescence declines with rising temp much faster than the turquoise-blue fluorescence of AgCl. The absorption bands at 2800 and 3400 A. of low Ag films of AgCl are linked with the transitions $^1S_0 \rightarrow {}^1P_1$, $^1S_0 \rightarrow {}^3P_1$, and $^1S_0 \rightarrow {}^3P_2$, with the $^1P_1$ and $^3P_1$ levels influ-

C.R.
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tinguishable. Transitions between $3p\ ^2P_{3/2}$, and $2p^5\ ^2P_{3/2,1/2}$ are radiationless. With a higher excess of Ag, doublet splitting of the $^2P_{3/2}$ level gives rise to triplet structure of $^2P_{3/2,1/2}$ and $2p^5\ ^2P_{3/2}$, which causes the appearance of the additional max. The temp.-dependence of the intensities of the sky-blue, the green, and the red emission bands is accounted for, according to Mott's (*Proc. Roy. Soc.* (London) **167A**, 384 (1938)) scheme, by intersections of the potential curve of the blue emission with the ascending branch of the curve of the green emission, and of the latter with the ascending branch of the red emission which intersects the potential curve of the normal state. The red luminescence of the high-Ag films is accounted for by concentration quenching of the upper energy levels responsible for the short-wave max. At a very high content of excess Ag the min. of the excitation energy levels lies beyond the points of intersection with the ascending branch of the potential curve of the normal state; luminescence disappears. The attribution, by Golub (C.A. 43, 6671*i*), of the red luminescence of single crystals of AgCl + $MnCl_2$ to $MnCl_2$, is correct only in the range from −183 to −150°; between −50 and −100° the red emission is due to AgCl. The alleged nonvalidity of Lambert's law asserted by Barshchevskii (C.A. 44, 6267*b*) for thin Ag halide layers is actually due to variations of the excess Ag content with the thickness. If the actual concn. of Ag were taken into account, Lambert's law should be found valid.

N. Ilina

L 33092-66 EWT(1)/T JK
ACC NR: AP5024073 SOURCE CODE: UR/0020/66/167/002/0474/0477

AUTHOR: Belkina, G. A.

ORG: none

29
28
22 B

TITLE: Production in a recipient of tolerance to homotransplanted skin and the significance of the extent to which the immune system is temporarily suppressed during this process

SOURCE: AN SSSR. Doklady, v. 167, no. 2, 1966, 474-477

TOPIC TAGS: rat, tissue transplant, immunology, antigen, drug effect, drug

ABSTRACT: The biological incompatibility of the recipient's tissue and a tissue transplant during homoplasty prevents wide utilization of this method in practice. Recent achievements afford a basis to assume that this obstacle is surmountable. M. I. Yefimov has substantiated one method of producing recipient tolerance to a homotransplant in the postembryonic period. The essence of the method is that activity of the recipient's immune system is temporarily suppressed, and the immune system is acted upon by donor proteins during this period. The present work was performed to ascertain the relationship between the production of recipient tolerance to a homotransplant, on the one hand, and the extent to which the recipient's immune system is temporarily suppressed, on the other. The author experimented on rats, transplanting skin grafts from the backs of donor (newborn, non-pedigreed) rats to

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ACC NR: AP6024073

to the backs of recipient rats (Wistar line, age 2-5 months).
The relationship between the effect of tolerance-producing antigen (donor protein, "universal homogenate") and immunosuppressive drugs was investigated in two series of experiments. In the first series, control group 1 received neither antigen nor immunosuppressive drug. Groups 2 and 3 each received antigen and immunosuppressive drugs starting on the day of the operation, but group 3 received more antigen and a stronger combination of immunosuppressive drugs (the somnifacients -- medinal and aminazine, plus cortisone) than did group 2 (somnifacients only). All the skin grafts died, but those of the hosts in group 3 survived the longest.
In the second series, tolerance was produced in all 3 groups three weeks prior to the operation (in contrast to the first series when antigen was first given on the day of the operation), and continued by injections on the day of the operation and afterwards ("universal homogenate"). Control group 1 received only the homogenate. Groups 2 and 3 each received immunosuppressive drugs, comparatively weaker in group 2 (somnifacients only) and stronger in group 3 (somnifacients plus prednisolone and 6 mercaptopurine). The skin grafts survived comparatively longer in all instances than in the first series. They took root in a small percentage (about 16%) of the hosts of group 2 and in a significant percentage (about 50%) of the hosts of group 3.

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ACC NR: AP6024073

The author concludes that genuine implantation was achieved only if the recipient's immune system was suppressed while tolerance was being produced. Moreover, the more powerfully the immune system was suppressed, the better the result obtained. Whereas in the first series of experiments there was only an increase in the lifespan of the homotransplant, in the second series genuine implantation of the graft was obtained in a significant percentage of cases. This difference must be attributed to protracted and powerful immunosuppression in the recipient. Thus, on the basis of experiment during homoplasty the death of a skin graft or its genuine implantation depends on the duration and strength of immunosuppression in the recipient while tolerance to the homotransplant is being produced in him. This paper was presented by Academician Yu. A. Orlov on 23 Feb 65. The author states that the work was performed at the suggestion and under the guidance of Professor M. I. Yefimov. Orig. art. has: 1 figure and 1 table. [JPRS]

SUB CODE: 06 / SUBM DATE: 19Feb65 / ORIG REF: 003 / OTH REF: 001

Card 3/3 BK

BELKINA, G L

AZIMOV, B.A.; AMEN-ZADE, Yu.A.; BORISOV, Ye.M.; BELKINA, G.L.; KUTUZOV, A.I.

Electric model solution of prismatic bar torsion problems.
Dokl. AN Azerb. SSR 11 no.4:233-242 '55. (MLRA 8:10)

1. Predstavleno deystvitel'nym chlenom Akademii nauk Azerbaydzhanskoy SSR M.F.Nagiyevym.
(Torsion)

Belkina, G.L.

Azerbaydzhanskiy nauchno-issledovatel'skiy institut po dobyche nefti.

2054. Aziaov, B. A., Amanzade, Yu. A., Berlekov, E. M., Belkina, G. L., and Katusov, A. I., The solution of prismatic-bar bending problems on an electrical model (in Azerbeidjani), *Doklady Akad. Nauk*, AzSSR 11, 10, 665-673, 1955; *Ref. Zh. Mekh.* no. 11, 1956, Rev. 7678.

The solution is briefly described of the bending problem of a prismatic bar under a concentrated load, obtained on the EM-7 electric simulator. Cross sections are examined of an equal-armed cross, an unequal-armed cross, a rectangle, and a circle weakened by a central square cut-out.

The obtained values of the shearing stresses, acting on points of the neutral axis, are compared with the corresponding stress values obtained by the Zhuravsky equation.

M. M. Manukyan

Courtesy Referativnyi Zhurnal, USSR

Translation, courtesy Ministry of Supply, England

SOV/124-57-8-9298

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 8, p 105 (USSR)

AUTHORS: Azimov, B. A., Amenzade, Yu. A., Borisov, Ye. M., Belkina, G. L., Kutuzov, A. I.

TITLE: On the Problem of the Twisting of Prismatic Rods (K voprosu krucheniya prizmaticheskikh sterzhney)

PERIODICAL: Dokl. AN AzerbSSR, 1955, Vol 11, Nr 12, pp 825-831

ABSTRACT: The paper studies the twisting of prismatic rods with a cruciform section, a Tee section, and a section bounded on the outside by a circumference and on the inside by an ellipse the center of which coincides with the center of the circumference. These problems are solved on an EM-7 electric-analog computer for specified relative dimensions of the section. Representations of the isolines for all three cases are shown in graphic form. The values of the potential differences, as well as the components of the tangential (shear) stresses derived from these differences, are submitted in tabular form. A stress-distribution diagram is presented for a round rod weakened by an elliptic cutout. The authors have made a comparison of the solutions obtained by means of the electric-analog computer

Card 1/2

On the Problem of the Twisting of Prismatic Rods SOV/124-57-8-9298

with the results obtained analytically for the cruciform section and the circular section with an elliptical cutout. It is shown that the error in the calculation of the shear stresses in the case of a cruciform section equals 1.08%, while in the case of the circular section it equals 24.57% at one point and 10.69% at another.

N. O. Gulkanyan

Card 2/2

BLOKHIN, M.A.; OVCHARENKO, Ye.Ya.; MYAGKOV, P.I.; SOTNIKOV, V.A.; MAMONOV, Yu.M.; BELKINA, G.L.

Improving the accuracy of X-ray spectral analysis by a dual channel method. Zav.lab. 31 no.4:423-426 '65.
(MIRA 18:12)

1. Konstruktorskoye byuro "TSvetmetavtomatika" i Rostovskiy gosudarstvennyy universitet.

BELKINA, G.L.; KUROYEDOV, V.A.; LAPOVOK, V.I.; LIKHTEROV, I.M.; MERMEL'SHTEYN, G.R.; OVCHARENKO, Ye.Ya.; PONOMAR', V.I.; SABAYEV, V.I.; SOTNIKOV, V.A.; FAYNBERG, L.I.; FEOKTISTOVA, N.D.

X-ray spectral analysis of brass in the process of smelting. Zav.lab. 31 no.4:427-428 '65.

(MIRA 18:12)

1. Konstruktorskoye byuro "TSvetmetavtomatika" i Artemovskiy zavod tsvetnykh metallov im. E.I.Kviringa.

BELKINA, G.S.

Second gas-bearing horizon in Berezovo. Trudy SNIIGGIMS no.1:173-174 '59. (MIRA 15:4)
(Berezovo region (Tyumen' Province)--Gas, Natural--Geology)

Belkina, L.I.

USSR.

MD

(2)

A rapid method for the determination of carbon monoxide in the air. V. O. Gurevich, L. I. Belkina, and A. V. Nenartovich. *Novosti Med.* 1952, No. 30, 63-4.—As a result of a review of the literature and personal experience a substance was prepd. of a small grainy consistency and of a greenish yellow color. The method of prepn. of this substance and its chem. nature are not divulged. When CO in different concns. is passed through a U-shaped tube contg. this substance, the color changes to green, bluish green, and blue. B. S. Levine

(A) L 1802-66

ACCESSION NR: AP5019520

UR/0244/65/024/004/0025/0028
615.857.061.2-015.3+616.71-
007.151.08-039.11

AUTHOR: Belkina, L. M.

TITLE: The question of prophylactic dosages of vitamin D

SOURCE: Voprosy pitaniya, v. 24, no. 4, 1965, 25-28

TOPIC TAGS: vitamin, medical experiment, experiment animal, infant disease, preventive medicine

ABSTRACT: The effect of various vitamin D doses for prevention of rickets was studied in 200 infants up to one year of age for the past several years at the Children's Department of the Food Institute. On the basis of the clinical data obtained, the optimal dose for this purpose should be 300,000 international units, while that recommended in 1956 by the Moscow Helath Department, 1,200,000 international units for the first year, has been found to lead sometimes to hypervitaminosis D without preventing rickets. The test reported extended to 24 infants receiving doses of 1,200,000 units in 2 courses of treatment of 20 days

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ACCESSION NR: AP5019520

each, at 1-2 and 6-7 months, together with exposure to sunlight or ultraviolet light. Calcium content was determined in diurnal urine with and without an empty stomach, and calcemia was determined by the Sulkovich test, further blood cholesterol content and serum alkaline phosphatase activity. Signs of rickets developed despite this treatment between 4-8 months of age, and one child showed signs of hypervitaminosis D. The above laboratory tests were conducted before and after the start and end of each course of therapy. Variations in the values under study were especially marked after the end of the secound course of therapy. Calcium elimination in the urine rose 2 fold from an average 18.9 mg per 24 hours after the first course and more after the second and was higher on an empty stomach. Sulkovich's test turned from weakly positive to positive after the first and to strongly positive after the second course, denoting hypercalcemia. Blood alkaline phosphatase activity declined somewhat from its initial level and serum cholesterol rose from an initial average 180 mg% to 230 after the second course. On the basis of these data, the administration of massive vitamin D doses in children above 6 months of age is considered ill-founded and dangerous. Orig. art. has: 2 figures

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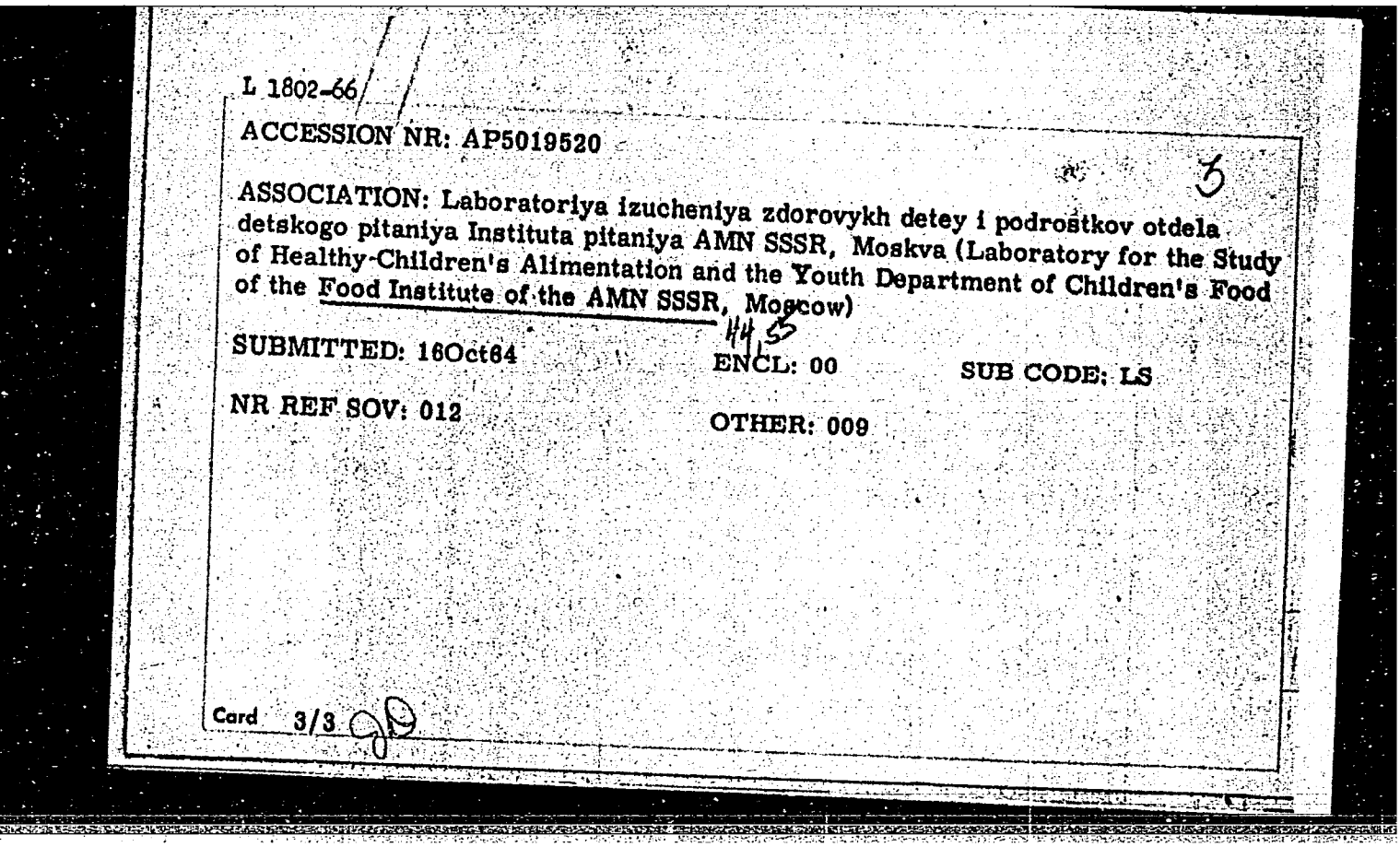

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ACCESSION NR: AP5019520

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ASSOCIATION: Laboratoriya izucheniya zdorovykh detey i podrostkov otdela detskogo pitaniya Instituta pitaniya AMN SSSR, Moskva (Laboratory for the Study of Healthy-Children's Alimentation and the Youth Department of Children's Food of the Food Institute of the AMN SSSR, Moscow)

SUBMITTED: 16Oct64 ENCL: 00 SUB CODE: LS

NR REF SOV: 012 OTHER: 009

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L 39216-65 EWT(1)/EWG(v)/FCC/EEC-4/EWA(h) Pc-4/Pe-5/Pq-4/Pae-2/Peb/Pi-4 RB/
GW/WS-4

ACCESSION NR: AR5017555 UR/0058/65/000/006/H017/H017

SOURCE: Ref. zh. Fizika, Abs. 6Zh124

AUTHORS: Belkina, L. M.; Bocharov, V. I.

TITLE: Apparatus for the measurement of absorption of radio waves in the ionosphere by observing extraterrestrial radio emission

CITED SOURCE: Tr. Sibirsk. fiz.-tekhn. in-ta pri Tomskom un-te, vyp. 45, 1964, 120-127

TOPIC TAGS: ionospheric absorption, radio wave absorption, cosmic radio emission, daily variation, critical frequency, ionosphere layer

TRANSLATION: The authors present a block diagram and the main parameters of apparatus for the measurement of absorption of radio waves in the ionosphere by observing the cosmic radio emission at 30 Mcs. It is shown that 30 Mcs is the optimal frequency for the measurements. The apparatus consists of a 7-element antenna of the wave-channel type, connected through a converter to an R-250 receiver. The converter contains a cascade amplifier and a mixer with quartz-controlled heterodyne. The signal from the output of the intermediate frequency amplifier is fed to a bridge detector and then to the input of an automatic-recording potentiometer

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ACCESSION NR: AR5017555

PRS-0.1. The sensitivity of the reciving equipment is not worse than 0.05 μV at a bandwidth of 1 kcs. The equipment is calibrated by replacing the antenna with a noise generator. The absorption was determined from the formula $L = -10 \log(P_1/P_0)$, where P_1 is the noise level for the given measurement session, and P_0 is the noise level for minimum absorption in the ionosphere, taken to be the absorption during quiet winter nighttime hours. Results are presented of measurments carried out in Tomsk in March--May 1962. The daily fluctuations of the absorption did not exceed 3 dB. The maximum absorption was observed during the daytime hours. The variation of the absorption is in good agreement with the variation in the critical frequencies of the E and F layers.

SUB CODE: IE, EC ENCL: 00

Card 2/2

BELKINA, L.M.

"Children's sanatorium" by N.M.Dmitrieva, V.A.Lebedeva. Reviewed by L.M.Belkina. Vop.pit. 18 no.4:77-78 Jl-Ag '59.
(MIRA 12:10)

(CHILDREN--NUTRITION) (HOSPITALS--FOOD SERVICE)
(DMITRIEVA, N.M.) (LEBEDEVA, V.A.)

BELKINA, I.M.

Vitam'n D requirements of breast-fed infants. Vop. pit. 23 no.5:63-67 S-O '64. (MIRA 18:5)

1. Otdel detskogo pitaniya (zav. - dotsent [illegible].V.Shmakov) Instituta pitaniya AMN SSSR, Moskva.

BELKINA, M. G.

Table for figuring the electromagnetic field in the shadow area for various soils Moskva, Sovetskoe radio, 1949. 75 p. (51-20083)

QC661.B415

BELKINA, M.G.

USSR / Radiophysics I

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9972

Author : Belkina, M.G.
Inst : Not given
Title : Diffraction of Electromagnetic Waves by an Ellipsoid of Rotation and by a Disk.

Orig Pub : Tr. 3-vo Vses. matem. s'yezda, T. 1, AN SSSR, 1956, 217

Abstract : Brief summary of a paper, devoted to the solution of two electrodynamic problems by the method of separation of variables in a spheroidal system of coordinates, namely diffraction by a prolate or oblate ideally conducting ellipsoid of revolution, excited by an electric dipole located on the axis of the ellipsoid and having a moment applied along the axis, and diffraction by an ideally conducting round disk, on the axis of which there is located a magnetic dipole with a moment parallel to the disk, located at arbitrary distance from the disk.

Card : 1/1

621.396.11.029.6 1570

Propagation of Radio Waves near the Horizon in the Presence of Super-refraction—V. A. Fok, L. A. Vainshtein & M. O. Beltrina. (*Radiotekhnika i Elektronika*, May 1956, Vol. 1 No. 5, pp. 575–592.)

Development of formula (see 1565). Numerical results are given for a particular parabolic *M* profile for wavelengths of 3 cm and 8 cm.

BELKINA, M. G.

"Radiation Characteristics of Spherical Surface Wave Antennas",

"Radiation Characteristics of an Elongated Rotary Ellipsoid",

"Diffraction of Electromagnetic Waves by a Disk".

Diffraction of Electromagnetic Waves on Certain Bodies of Rotation, Soviet Radio (Moscow, (1957).

BELKINA, M.G.

PHASE I BOOK EXPLOITATION 499

Azrilyant, P. A., and Belkina, M. G.

Chislennyye rezul'taty teorii diffraktsii radiovoln vokrug zemnoy poverkhnosti (Numerical Results of the Theory of the Diffraction of Radio Waves Around the Earth's Surface) 2d ed. Moscow, Izd-vo "Sovetskoye radio", 1957. 44 p.

ED.: Ivanushko, N. D.; Tech. Ed.: Svetnikov, A. A.

PURPOSE: This book is addressed to radio engineers concerned with the calculation of radio wave propagation and the design of radar equipment.

COVERAGE: This monograph assembles in the form of tables and graphs the results of calculations made to determine the electromagnetic field attenuation factor of horizontal and vertical polarization radio waves during their propagation around the surface of the earth under normal conditions. The basic calculations of the attenuation factor were made in succession and include the shadow zone and the penumbral zone. The fitting of the diffraction curves with the plots of the reflection formulas has been studied. Additional formulas, tables and graphs are given which make it possible to calculate by simple operations normal radio wave propagation (beginning with the light zone and ending with the deep shadow zone). An example is

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given of the use of the numerical data obtained from this study in calculating electric field intensity curves for several wavelengths. The results obtained are applicable to any horizontally polarized wavelength, and for earth surfaces of any electrical properties. For vertically polarized waves, they are applicable to the extreme cases of very short and very long waves when it is possible to consider the earth surface as a quasi-ideal reflector. V. A. Fok is mentioned in connection with his integral representation of the function for attenuation factor. B. A. Vvedenskiy is mentioned in connection with his calculations of the complex parameter 9 and attenuation factor V. There are 33 numerical tables, 44 insets containing 63 diagrams and 9 Soviet references, and 2 English references.

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Numerical Results of the Theory of the Diffraction (Cont.) 499

AVAILABLE: Library of Congress

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20-114-6-13/54

AUTHOR: Belkina, M. G.

TITLE: Asymptotical Representations of Spheroidal Functions With an Azimuth Index m-1 (Asimptoticheskiye predstavleniya sferoidal'nykh funktsiy s azimutal'nym indeksom m = 1)

PERIODICAL: Doklady Akademii Nauk SSSR,1957,Vol.114,Nr 6,pp.1185-1188(USSR)

ABSTRACT: The author examines an equation of the type $Y''+c^2 p(\eta)\, Y=0$, $c \gg 1$, where the function $p(\eta)$n has poles of first order and zeros in the points η_k. Further it should be possible to chose a "jauge equation" $y''+ P(\varphi)\, y = 0$ whose independent solutions $y_1(\varphi)$ and $y_2(\varphi)$ are known. The poles and zero positions φ_k of the coefficient $P(\varphi)$ shall be mutually unique and monotonously correlated to the poles and zero positions η_k. Then the following asymptotical representation of the general solution of the equation $Y''+c^2 p(\eta)\, Y = 0$, $c \gg 1$ is obtained (B_1 and B_2 are arbitrary constants):

$$Y(\eta) = \sqrt[4]{\frac{P[\varphi(\eta)]'}{p(\eta)}} \left\{ B_1 y_1 \left[\varphi(\eta)\right] + B_2 y_2 \left[\varphi(\eta)\right] \right\} .$$

Card 1/2

SOV/109-3-12-1/13

AUTHORS: Fok, V.A., Vaynshteyn, L.A. and Belkina, M.G.

TITLE: Duct Propagation of Radio Waves in the Lowest Layer of Troposphere (Rasprostraneniye radiovoln po prizemnomu troposfernomu volnovodu)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 12, pp 1411 - 1429 (USSR)

ABSTRACT: The work is devoted to the theory of propagation of radio waves in the tropospheric waveguide (inversion layer), which is elaborated on the assumption that the points of transmission and reception are both inside the waveguide. This type of propagation can be referred to as the inside-layer propagation. The basic formulae of the work are taken from a number of the authors' previous works (Refs 1-3). It is assumed that the attenuation coefficient for the case when the refraction index of the atmosphere is an arbitrary function of height can be expressed by:

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Duct Propagation of Radio Waves in the Lowest Layer of Troposphere

$$V(x, y, y', q) = \sqrt{\frac{x}{\pi}}\, e^{-i\frac{\pi}{4}} \int_C e^{ixt} F(t, y, y', q)\, dt \quad (1)$$

where the contour C extends over all the poles of the integrated function in the positive direction. If the parameter $q = \infty$, which corresponds to an arbitrary polarisation at cm and short waves and to horizontal polarisation at longer waves, the integrated function F can be written as shown in Eq (2), where y and y' are normalised heights of the point of transmission and the point of reception, as defined by Eqs (3). The parameter x is the normalised distance between the two points, as expressed by Eq (4), where the parameter m is given by Eq (5) in which a is the radius of the Earth. The functions f_1 and f_2 are the independent solutions of the differential equation which is expressed by Formula (6). The function p(y) in Formula (6) depends on the refractive index M(h) in the manner shown in Eq (7),

where n is the refractive index for the air. The sub-integral function F , for the case of the inside-waveguide propagation, can be expressed by Eq (20), where Λ is defined by Eq (21). Various auxiliary functions in Eqs (20) and (21) are defined by Eqs (12) - (19). The attenuation coefficient V can be represented as a series:

$$V(x, y, y') = 2\sqrt{\pi x}\, e^{i\frac{\pi}{4}} \sum_{m=1}^{\infty} R_m e^{ixt_m} \qquad (22),$$

where R_m is the residue of the function F at the m-th pole t_m. The expression for R_m is therefore in the form of Eq (24). Most of the numerical results presented in this work are based on the use of Eqs (22), (23) and (24). The accuracy of these equations is borne out by the fact that the attenuation coefficient evaluated by using them is only slightly different from that determined by using accurate formulae; the results are indicated in Figures 1. The heavy curves of Figures 1 were found from the accurate

formulae (Eqs (25) and (26)) while the fine curves correspond to the results obtained from Eqs (23) and (24). The functions f_1 and f_2 of Eq (2), which are referred to as the height factors, can be evaluated by using the Airy functions. Thus, it is shown that f_1 and f_2 are in the form of Eqs (31), where Ψ_1 and Ψ_2 are given by Eqs (32); ξ_1 is found from Eqs (33), for which y_1 is the smaller root of Eq (34); v and u in Eqs (32) are the Airy functions. From Eqs (31), it follows that R_1 can be expressed by Eq (36). If R_1 is evaluated approximately by employing Eq (24) and more accurately by employing Eq (36), it is found that Eq (24) gives erroneous results. This is shown in Table 2, where R_1 is evaluated for two values of Y and two values of y_1. In this case, it is therefore necessary to employ Eqs (31), (32) and (33). The attenuation coefficient V is dependent on x, y and y' and on the function p(y) which is dependent on the

parameters y_i and y_l. The function $p(y)$ is characterised by three parameters which are expressed by Eqs (38), (39) and (40). These parameters are shown in Tables 3a and 3b for two groups of propagation conditions (see p 1418). The curves of $p(y) - p(y_i)$ for all the cases of Tables 3 are shown in Figures 2. The attenuation functions for these cases are shown in Figures 3 and 4. The curves of Figures 2, 3 and 4 can be used to investigate the conditions of actual propagation routes. The conditions represented by the first row of Table 3a and the first row of Table 3b were chosen for special investigation. The results are shown in Figures 10, 11 and 12; Curves 1 in these figures correspond to the wavelength of 3.33 cm, Curves 2 are for the wavelength of 10 cm, Curves 3 are for 30 cm, Curves 4 of Figure 10 are for the 90 cm wavelength. In an earlier work (Ref 3), it was shown that Eq (23) can be written as Eq (45), where m is the number of a given root and S_1 is in the form of the integral given by Eq (46). Eq (45) can also be written in the form of Eq (52) where G is expressed by Eq (53) and z_1 is the root of

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Eq (54). From Eq (52) and Eq (55), it follows that the critical wavelength for the tropospheric waveguide is in the form of Eq (58). The term "critical wavelength" does not imply a discontinuity in the attenuation coefficient of the system; it is therefore a purely arbitrary term. It is of interest to find what factors, apart from $M(0)$ and $M(h_i)$, determine the magnitude of the critical wavelength. It is found that $M''(h_i)$ is also one of the principal parameters which determines the value of the attenuation coefficient. This is borne out by the fact that the factor $\varkappa_m$, which is defined by Eq (67), can be expressed in the form of Eq (70). By employing parameters h, $M(0)-M(h_i)$ and $M''(h_i)$, it is found that the attenuation coefficients for simple waves are approximately equal for widely differing types of propagating conditions, i.e. M-profiles. This means that it is necessary to take into account also some additional parameters but this problem has not yet been solved. One of the most important results of

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the analysis is the fact that long-distance tropospheric propagation of the waveguide type is only slightly dependent on the wavelength. Thus, even if the propagated wavelength is longer by an order than the critical wave, a long-distance propagation is still possible. The calculations for this work were carried out by the mathematical group, consisting of O.A. Merkulova, V.M. Khapayeva, A.M. Soboleva, L.Ye. Molodtsova, Z.G. Repina and A.G. Mayorova. There are 17 figures, 4 tables and 7 references, 3 of which are English and 4 Soviet.

SUBMITTED: June 1, 1957

AUTHORS: Vaynshteyn, L.A. and Belkina, M.G. SOV/109-4-4-2/24

TITLE: Influence of a Metal Sheath on the Backward Radiation of Directional Antennae (O vliyanii metallicheskoy obolochki na zadneye izlucheniye napravlennykh antenn)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 4, pp 566 - 575 (USSR)

ABSTRACT: The antenna considered is in the form of an open end of a circular waveguide, which is terminated with a spherical sheath. This is done in such a way that the waveguide passes through an aperture cut in the sphere (Figure 4). First, the radiation of an open-ended waveguide is considered (Figure 1a), so that the electromagnetic field produced by it, in the presence of the H_{11} wave, can be described by Eqs (1) where the function $F^{(1)}(\varphi)$ represents the directional pattern in the magnetic plane $\varphi = 0$, while the function $F^{(2)}(\varphi)$ gives the pattern in the electric plane $\varphi = \pi/2$.

Functions $F^{(1)}$ and $F^{(2)}$ have been accurately

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determined by a number of authors (Refs 1, 3). Apart from the angle ϑ, these functions are also dependent on the parameter kb, which is defined by Eq (2). The functions are plotted in Figures 2. If the end of the waveguide is fitted with an ideally conducting infinite plane (Figure 1c), the radiation fields can approximately be represented by Eqs (5), where the functions $D^{(1)}$ and $D^{(2)}$ are defined by Eqs (6). In Eqs (1) and (5), the quantity m is equal to the magnetic moment of a dipole which gives in the direction $\vartheta = 0$ the same radiation as the open end of the waveguide; the moment is proportional to the amplitude of the incident wave. If a horizontal magnetic dipole having a moment m is directed along the axis x and situated at an ideally conducting sphere of radius a, the radiation field is in the form of Eqs (10), where $W^{(1)}$ and $W^{(2)}$ for the "backward" semi-space are given by Eqs (11); α and M in these equations are

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normalised parameters which are expressed by Eqs (12). Expressions for the functions $U^{(1)}$, $U^{(2)}$, W and U are given in the authors' earlier work (Ref 2). The radiation field of the waveguide in the presence of a terminating sphere (Figure 4) can, therefore, be represented by Eqs (1) provided that the functions $F^{(1)}$ and $F^{(2)}$ are given by Eqs (16), where the functions $\delta^{(1)}$ and $\delta^{(2)}$ are defined by Eqs (9). Eqs (16) are valid for the backward semi-space. In the forward semi-space the functions $F^{(1)}$ and $F^{(2)}$ are given by Eqs (17). The above results were employed to investigate a practical antenna. The results are illustrated in Figures 5 and 6. Figures 5 show the directivity of the antenna in the presence of a sphere for $kb = 9$ and $ka = 50$. Figure 6 gives a comparison between the backward radiation in the case of an open-ended waveguide and for a waveguide terminated with a sphere; the upper curve corresponds to the open-ended case. The validity of the above method of analysis

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is investigated and it is shown that the directional diagrams of Figure 5 and the lower curves of Figure 6 should be regarded as representing rough approximations; the errors become particularly pronounced when the values of kb become large. Also in the vicinity of the maxima, the errors become appreciable. The authors express their gratitude to Academician V.A. Fok for discussing this work. There are 6 figures and 3 Soviet references.

SUBMITTED: December 25, 1957

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ACCESSION NR: AT5022097 UR/2778/65/000/014/0060/0074

AUTHOR: Varzhenevskiy, N. S.; Belkina, M. M.

TITLE: Carbon-film hygrometer sensors

SOURCE: Leningrad. Nauchno-issledovatel'skiy institut gidrometeorologicheskogo priborostroyeniya. Trudy, no. 14, 1965. 60-74

TOPIC TAGS: humidity measurement, meteorological instrument, hygrometer, carbon film hygrometer, radiosonde

ABSTRACT: It is noted that the carbon-film hygrometer sensors developed in the USA over the last 20 years seem to have the basic shortcoming of changing their characteristics (with time) under normal conditions of storage (W. J. Smith, N. J. Hoeflich, Bulletin of the American Meteorological Society, v. 35, no. 2, Feb. 1954; R. M. Rados, Chief Experimental Meteorology Branch, Meteorological Development, Laboratory, Geophysics Research Directorate, U.S. Air Force, Bedford, Mass. Weamnerwise. December, 1960). New carbon-film hygrometer sensors were tested extensively at the Scientific Research Institute of Hydrometeorological Instrument Making (NIIGMP) over the the 1961-63 period to determine their suitability for radiosonde operations. The technique of carbon hygrometer sensor production is

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given in the article. Results of these tests indicate that: 1) carbon sensors with various electrical resistances can be built; 2) such hygrometers are free of polarization and can operate on AC as well as DC current; 3) their inertia is very low down to -40C and they exhibit a small temperature coefficient; 4) their small size and weight makes them ideal for radiosondes; 5) carbon sensor calibration curves are not stable with time; 6) such hygrometers must be utilized soon after their calibration; and 7) acetylcellulose-based elements must be made of high-purity material. It is suggested that studies on hygrometer materials be continued in order to develop bases which provide better reproducibility and to find appropriate carbon hygrometer stabilizers. Orig. art. has: 5 figures and 12 tables. [08]

ASSOCIATION: Nauchno-issledovatel'skiy institut gidrometeorologicheskogo priborostroyeniya, Leningrad (Scientific Research Institute of Hydrometeorological Instrument Design) 44,55

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